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ABSTRACT

The problem of finding an adequate organization for the distance teaching subsystem in the Open University of Venezuela (Universidad Nacional Abierta) is analyzed. Problems facing this subsystem concern: communications with the headquarters and within the learning centers network, interaction with the environment in order to create a favorable balance of resources, and capacity for influencing the top-level decision-making in the institution. Analysis of these problems through an open system perspective provides some insights about the factors that determine the problems. It is suggested that the current design of the organization is not oriented to receive external influences and take advantage of them to create resources for the institution. The failure of the structural design can be appraised as a serious impairment for the effectiveness of the institution in accomplishing its teaching function. Alternative organizational designs for the distance teaching subsystem might include the concepts of unit differentiation and integration, loose coupling, use of scanning units, and design of program-specialized staff positions. It is proposed that the internal structure of the learning centers include a Relations Unit, which would manage the institutional links between the center and external organizations. The proposed structure of the local center has greater specialization of functions as compared with the current structure. A bibliography is appended. (SW)

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THE ORGANIZATION OF THE DISTANCE TEACHING SUB-SYSTEM IN AN OPEN UNIVERSITY

By Fabio J. Chacón

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THE ORGANIZATION OF THE DISTANCE TEACHING SUB-SYSTEM IN AN OPEN UNIVERSITY

PART ONE: ANTECEDENTS AND DELIMINATION OF THE PROBLEM

1. Purpose of this Individual Study

This study is placed in the context of the National Open University of Venezuela (identified from now on as UNA: Universidad Nacional Abierta), which is an institution devoted to college and professional instruction for the adult population. UNA offers career programs in four main areas: Education, Engineering, Business and Administration, and Applied Mathematics.

The students of UNA are most frequently over 21, with previous higher education experiences--completed or not completed, married, and work during the daytime. They are enrolled in 18-week semesters, and they do not have to attend lectures or scheduled meetings; instead of that, they work in their homes with individualized textbooks, attend to special television and radio broadcasts, have sporadic and voluntary meetings with academic advisors and--eventually--engage themselves in in-service training experiences in industry or public institutions. Student assessment is performed by means of "presential exams"[1] and conventional course-work as papers and practical assignments.

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[1] A "presential exam" is a scheduled event in which students of a determinate course meet together to be tested according to an evaluation instrument prepared in the Headquarters.

From the point of view of its functioning, UNA is a very complex organization, formed by a Central Headquarters, in Caracas, and 20 peripheral Learning Centers, located in main cities of the country.[2] The Central Headquarters in Caracas is in charge of the administration of the whole system and of the design and production of the curriculum materials for the instruction. The Learning Centers are in charge of student management, delivery of learning materials, administration of student assessment, guidance and academic advisory, multi-media library and other related functions.

The focus of this study is the Learning Centers and their relationships with the headquarters. This is what will be called here the Distance Teaching Sub-System (DTS), being its main functions to disseminate instruction throughout the country and to provide academic services to the students. This requires a permanent interaction with the whole system of UNA. The DTS has the responsibility of providing learning facilities and resources to the nearly 20,000 students of the University.

UNA is a relatively new institution--it began to admit students just in October 1978, and for that reason it is far from being a well consolidated organization. Currently the Learning Centers are operating with considerable problems:

- Lack of an adequate supply of personnel, space, library resources and communication services.
- Tardiness of the bureaucratic channels for processing administrative and academic issues which require decision-making in the central headquarters.

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[2]Venezuela has 23 Federal Entities--named states, territories or Capital District. UNA centers are located in main cities of the entities, but not necessarily in the capital cities.

- Lack of efficient information-processing services in order to handle with student records and administrative transactions.

This study is intended to explore one specific side of this conglomerate of problems: the nature of the organizational links between the headquarters and the centers, and within the centers and students. This involves an analysis of the current structural design of the organization, the division of responsibilities among the constituent units of the DTS and the formal and informal communication patterns. The focus will be, then, in the structure of the organization and in the main functional processes of the DTS.

The reason for selecting this point of emphasis in the study is based on an assumption that will be documented later: UNA has to find a proper organizational design of the DTS in the context of the whole system before investing in solving other impairments that make difficult the operation of the Learning Centers. The organizational design is like the skeleton of all the activities in the institution; therefore, any major dysfunction in the basic structure will continuously generate problems in the activities. This kind of problems cannot be solved simply by adding resources, because the new resources will be affected also by the structural dysfunction.

On the basis of the former discussion, it can be said that the general purpose of this study is to explore some organizational alternatives that would facilitate the management of and interaction among the central units and the learning centers. Following this line of thought, in the next section the organization of UNA is presented in a rough sketch. This will be useful to identify the structural factors that are producing an inadequate functioning of the DTS.

2. Outline of UNA Organization

The current organization of UNA is based on two major official documents: The UNA Project,[3] elaborated by the initial Organizing Committee of the University, and the Reglament or Bylaws of UNA[4]--which was issued by the Presidency of Venezuela in 1977.

A detailed analysis of each one of the organizational components of UNA is out of the scope of this Individual Study, because it will require the presentation of very extensive information. For that reason, the structure of the institution will be presented here in a rough summary, and only the units involved in the DTS will be described in their responsibilities and type of personnel.

Figure 1 outlines the most important components of the organization of UNA. These are grouped in four levels according to their share in amount of authority and participation in decision-making. The higher a level is--i.e., overall management--it will have more influence in the development of the activities in the organization; conversely, the lower a level is--i.e., Line of Operations--it will deal with more specific issues and the decisions of this level will be affecting only a restricted area. These four levels are accepted by most of the authors in the theory of organizations as an appropriate description of the general pattern according to which complex organizations are built.[5] The meaning of each one of the levels can be expressed as follows:

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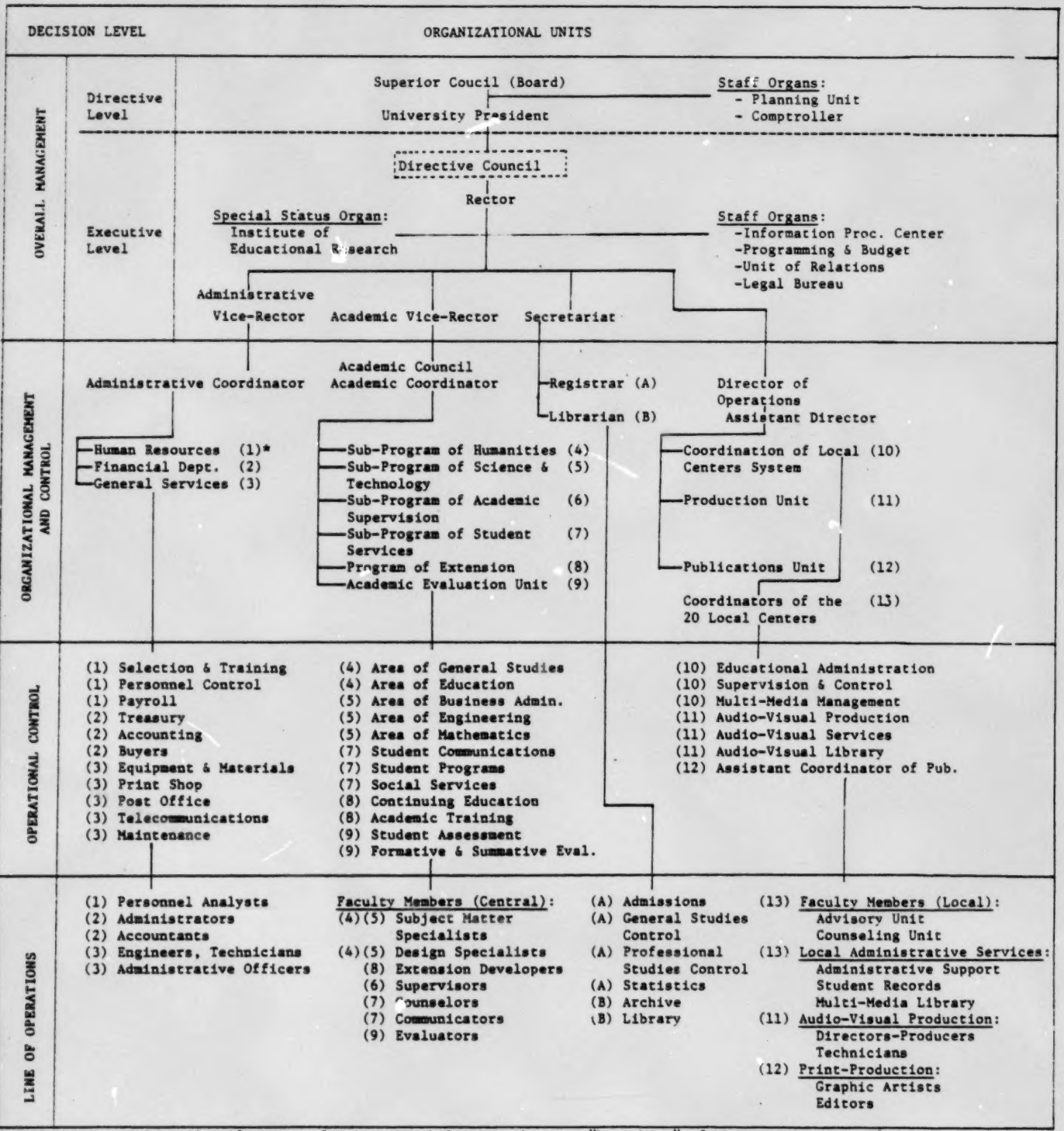
[3]The UNA Project was elaborated by an Organizing Committee, appointed by the Ministry of Education. It was published by UNA in Caracas, 1977.

[4]Official Gazette of the Executive, Reglamento de la UNA, Caracas, 1977.

[5]Kast & Rosenzweig, 1970, Chapter 14.

Figure 1: OUTLINE OF THE ORGANIZATIONAL STRUCTURE OF UNA



* Numbers are used as identification of units that belong to the same "branching" of the organization; if a unit or charge in a lower level has the same number as one in a higher level, it means that the former "belongs" or is a part of the latter.

Overall Management

It defines the general goals of the institution, establishes guidelines for the allocation of resources according to the priority of programs, approves the general budget, establishes procedural norms, performs strategic planning with a wide scope of time, knows and decides on any major transaction of the organization

Organizational Management and Control

Performs tactical or project planning, allocates resources for the execution of projects, performs budgeting of functional units or areas, controls project execution.

Operational Control

Deals with the direct supervision of personnel in the execution of tasks, performs operational planning and control. Decisions at this level are concerned with short-term actions.

Line of Operations

This is the task-execution level; decisions are concerned with the utilization of effort and specified resources in order to accomplish specific objectives. Content of decisions varies highly according to the purpose of action of the respective unit: administrative support, production of instructional materials, student assessment, student counseling, etc.

It can also be observed in Figure 1 that UNA System is divided into four main functional areas:

The Administrative Area

This is under the direction of the Administrative Vice-Rector and it is in charge of providing logistic support for all the essential activities of the institution. The typical tasks of the administrative area are: budget control, keeping records of the personnel, paying salaries, purchasing goods and services, maintaining the physical plant and equipment, providing clerical and blue-collar personnel where needed.

The Academic Area

This is under the direction of the Academic Vice-Rectorate. It is the essential program of the University, because it generates the fundamental processes of the institution: teaching, assessing learning, production of knowledge and extension. Most of the people in this area are members of the Faculty or "Profesorado." The typical tasks of the academics are the following: design of the curriculum, elaboration of instructional materials, design of evaluation and assessment instruments, design of specifications for the implementation of courses and other academic activities, training of the counselors and advisors--who are in direct contact with the students, technical supervision of the implementation of the curriculum and design of extension programs.

The Secretariat Area

This one is dependent on the Executive Secretariat of the University, whose main functions are to manage the information that is necessary in order to certificate the student learning experiences and give an official character to all the executive decisions at the top

level. The typical tasks of the Secretariat Area are the following: keep the general archive of the University, manage all the student records, provide individual reports and accreditations of academic accomplishments and disseminate the proceedings of the Superior Council and the Directive Council.

The Operations Area

This is dependent on the Director of Operations, who reports directly to the Rector. Operations is the largest sub-system of the institution. It is in charge of two major functions: to produce physically the printed and audiovisual materials for instruction, and to administrate the network of the twenty Learning Centers. Because of these two functions the Operations Area must be in tight interaction with the Academic Area in order to maintain congruity of the instructional programs by coordinating the design mission--executed by the central faculty--with the execution mission--developed in the Centers. The typical tasks of Operations are: editing and printing the textbooks elaborated by the academics, producing television or audio programs, distributing instructional and assessment materials, providing counseling and academic advisory to the students in the centers, administrating presential exams, arranging the learning environments required for special learning activities--such as laboratory practices, computer use or direct experiences of work. The advisors and counselors working in the centers have also the status of "members of the Faculty" as the academics, but they do not have direct participation in the decision and production of the instructional materials. From this description, it may be

easily inferred that the core of the DTS is in the Area of Operations, but it is necessary to take on account that the relationship between this core and the other units of the System are also fundamental for the DTS.

Besides the structural components that have already been mentioned, it is convenient to describe briefly two staff organs attached to the Rector which may have special relevance for the DTS. These organs are:

The Institute of Educational Research

Which has the purpose of generating knowledge that may be supportive or explanatory for the system of distance teaching. This institute has a small number of personnel by itself, but works in collaboration with personnel from other dependencies of the organization, mainly from the Academic Area and the Operations Area.

The Information Center (CIIUNA)

Which operates the computer data processing system of the University. This one has a fundamental role in the distance learning model of UNA, because it has to process all the meaningful information about the students that are scattered throughout the country--i.e., admission records, computerized marking of the presential exams, subject matter records of students, student statistics and others.

3. Diagnosis of the DTS from the Point of View of Organization and Processes Design

The network of Learning Centers, as it was stated in the previous section, is under the Direction of Operations. This sub-system has the particularity of being the only one in UNA that has a center-peripheric structure, which means that the coordination of the centers is in the

headquarters but there is also a subordinate coordination in each one of the learning centers.

The 20 centers are grouped in four regions:[6]

REGION	CHARACTERISTICS	ENTITY
Eastern	Relatively low population area, mostly coast. Very important oil production industry, mineral production (iron, aluminum, coal, etc.) and fishing industry.	Monagas Bolívar Delta Amacuro Sucre Anzoategui Nueva Esparta
Northwestern	Relatively dense population. All coast states. Very important oil production area and also large business development. High agricultural activity and cattle production.	Falcón Zulia
Andean	Relatively dense population. All high mountains states. Main activities: agriculture and related industries and business.	Táchira Mérida Barinas
Central-Southern	Relatively low population area. Plains region. High agricultural activity and cattle production, business and industry.	Guárico Apure Cojedes
Central-Western	Relatively dense population. Mixed topography and also mixed economic sources: agriculture, minerals, cattle, small industry.	Lara Yaracuy Portuguesa Trujillo
Central	Very densely populated area, mostly urban. High number of educational institutions. High business and manufacturing industry.	Distrito Federal Aragua Miranda

This grouping in regions is only by geographic organization, because there are not special departments in UNA to coordinate each region.

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[6]Source: Planning Unit of UNA, 1980, Compendio de Planteamientos, p. 99.

Therefore, it may be inferred that the task of managing the 20 centers is very complicated due to the amount of interactions required.

The structure of the current DTS core system is presented in Figure 2. It is important to analyze the responsibilities of the components of this sub-system in order to determine how they relate to other parts of the organzation.

The coordinating units of the DTS are located in Caracas; these are the following:

Coordination of Local Centers

This is formed by one Coordinator, who reports to the Director of Operations, and his accompanying staff. Their main responsibility of this role is to manage the whole sub-system of Learning Centers. The following units depend structurally on this Coordination.

Supervision and Control Unit

This is in charge of the surveillance of the operation of the centers, which implies the following: keep cumulative records of students and personnel in the centers, detect problems in the implementation of instruction and report them to the related decision-making levels, keep control of the transactions of the Local Centers with its environment (i.e., enrollment, payment of fees, sales of instructional materials).

Educational Administration Unit

This unit is in charge of transforming the instructional specification of the courses--issued by the Academic Areas--in operational prescriptions for the implementation. It also has

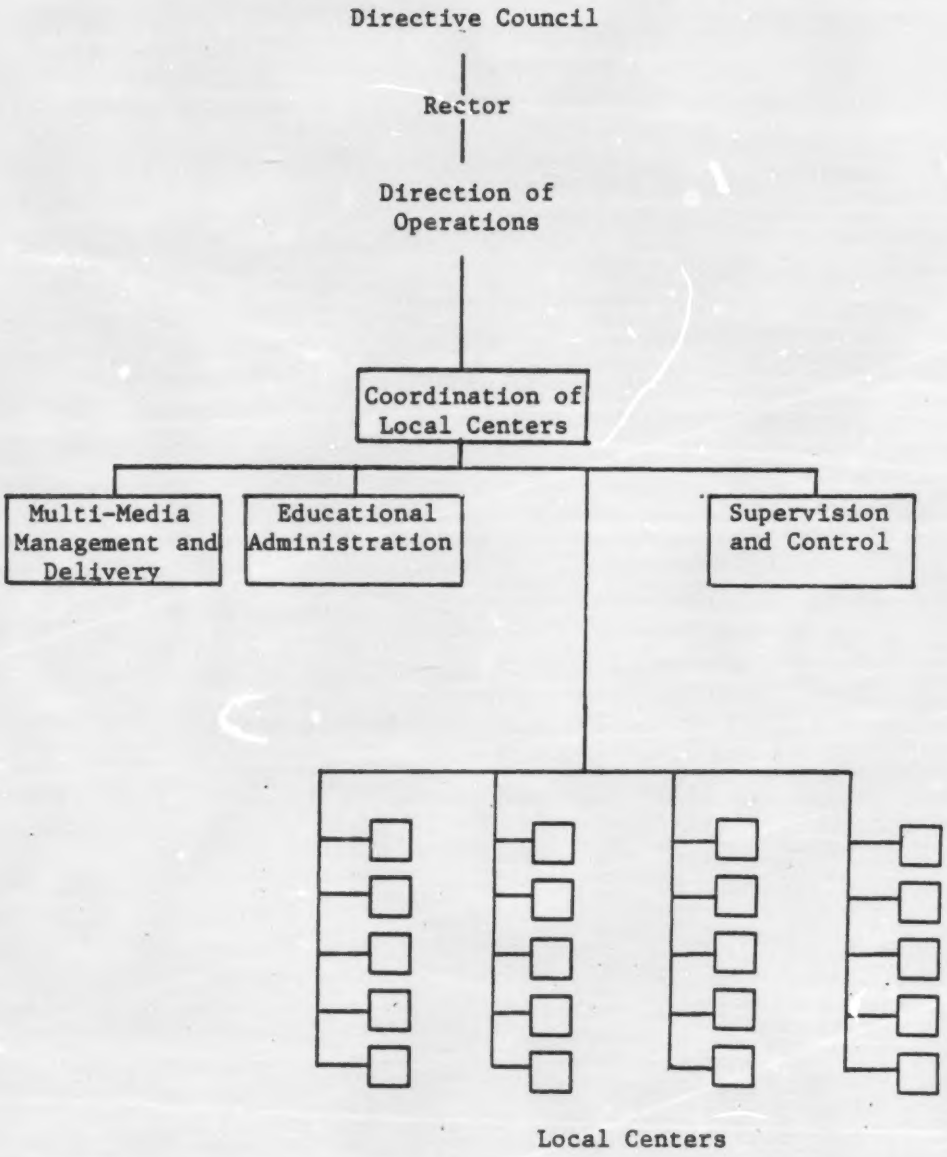

Figure 2. Sketch of the Organization of the Local Centers System of UNA.

the task of controlling the administration of the instruments for student testing and evaluation.

Multi-Media Management Unit

This unit takes care that the individualized textbooks, library texts, audiovisual programs, assessment materials and other media are supplied to the centers on time, and according to the expected numbers of students. This means that the Multi-Media Unit has to store, package, transport and deliver to the centers all the instructional and assessment materials.

The 20 Local Centers have all similar structures with the following basic components:

The Coordinator of the Center and his attached staff are in charge of the operational planning and supervision over the service units of the Center: Counseling, Academic Advisory, Supervision of Assessment, Student Records and Multi-Media Library.

Counseling. Does orientation and guidance of the students, helping them to adapt and find their way in the academic programs of UNA.

Academic Advisory. It is formed by groups of subject-matter-experts who work part-time for UNA, being able to help the students with difficulties in the content of the courses, and supervise them in special learning activities as laboratory practices, fieldwork, projects and papers.

Administrator. Carries out the supportive tasks of payroll, purchases, security, maintenance, request for supplies, etc.

Supervision of Assessment. This function is executed by contracted test supervisors, working under the direction of the Coordinator of the Center. They are not permanent personnel, but come to work only during the scheduled exam hours, usually four to five times a month.

Student Records. This one performs the record keeping function for the Center. and reports to the Supervision and Control Unit in the headquarters.

Multi-Media Library. Allows the students to use UNA's and conventional textbooks, television and audio programs, lab kits and other media for the courses.

An analysis of the structure of the DTS reveals several handicaps that obstaculize an efficient operation of the systems. The most important of these flaws or handicaps are the following:

1° The DTS is placed in the Operations Area along with the Production Unit. These two sub-systems are completely different with respect to goals, kind of technology used,and kind of specialization of the personnel. This is contrary to the logical way of differentiating the task units in an organization, because it is more efficient to group in the same area those people who work with similar goals and with the same technology. However, in the case of UNA, the Director of Operations has to manage two processes so different as the production of printed materials, television and audio programs--on one hand--and the coordination of the daily activity of student advisory, counseling and assessment--on the other.

2° The DTS, being the largest subsystem of UNA and the most important for accomplishing the essential mission of the University, is not connected directly with the maximum decision level of the institution.

In order to grasp the conceptual and factual relevance of this problem, it is necessary to explain in the first place that the highest executive authority in UNA is the Directive Council--which is formed by the Rector, the Academic Vice-Rector, the Administrative Vice-Rector and the Secretariat; over this council is only the President and the Board (Superior Council), and they are not executive constituencies, because they are not involved in the daily affairs and decision-making of the institution but in general policies.

As the Direction of Operations is not a member of the Directive Council, the Learning Centers are not represented directly in the highest level of decision but through the mediation of the Rector, who acts also in the name of the whole University. It has to be added too, that below the Director of Operations there are two more steps before reaching the Centers: the Assistant Director of Operations and the Coordination of the Learning Centers System.

In summary, it can be observed that the DTS is placed structurally too far from the central authority and power sources in UNA, and this--of course--causes a serious limitation of its possibility for influencing the decisions on crucial matters.

3° There is an organizational gap between the central Faculty or "Profesorado"--under the Academic Vice-Rectorate--and the local Faculty in the Learning Centers. This is caused partially by the

problem mentioned in point 2°, and also partially because there are not formal lines of interaction between the academics in Caracas and the advisors and counselors in the centers. This means that the people who design a course--i.e., in General Chemistry--rarely, if ever, have the opportunity of discussing the content and methodology of this course with the academic advisors of the centers, who are in charge of implementing that course. This problem generates constantly difficulties of communication between the central level and the centers in respect to the specifications for the implementation of instruction and the norms for student assessment. It also prevents an efficient process of maintenance of the instructional materials on the basis of field evaluation.

4° The connections between the Secretariat and the Local Centers are also very loose, for analogous reasons to those of point 3°: there is a lack of proper lateral relationships between Secretariat and Centers, and no direct interaction in the top decision level. The Secretariat has the crucial function of managing the student records, which is the support for the accreditation of learning and the expedition of degrees. Currently, when a student presents an exam, he receives a mark in the Center in which he is enrolled; then, the answer sheets of the exam are sent to the Information Center in Caracas in order to be marked again by computer, for control purposes; finally, the records of the Information Center are received by the Registrar in the Secretariat who puts them in files. It is frequent to find discrepancies between the mark that the student receives in the Center and the mark registered by the Secretariat as an official record.

When the student has to be assessed by means of other procedures--different from objective tests--the problems of information exchange among the academics, the centers, and the Registrar are even greater.

If one studies the interaction between the centers and the Academic Vice-Rectorate, it can be appreciated an analogous problems of information exchange and confusion of lines of responsibility. In summary, one can say that the current structure of the DTS in UNA is characterized by an inadequate placement in the organization--in the same basket that the Production Unit--and a lack of proper formal interaction links with the other main functional areas of UNA: the Academic, the Administrative and the Secretariat. This idea will be worked out later when the different alternatives of "solution" to the problem are discussed.

4. Delimitation of the Problem

It can be easily inferred that the gaps and imprecisions of the Local Centers Sub-System or DTS cannot be solved by merely re-arranging the structural components. These problems have to be attacked from several points of view. For instance, it is needed to plan with precision the human and material resources that will be needed in the next five years, this will give an idea of the limits within any structural change has to occur. It is necessary also to define clearly the norms and procedures for every important type of exchange that occurs between the central headquarters units and the local centers, and all the personnel involved in those exchanges must be trained accordingly, in order to avoid confusions of roles or tasks. Another important requirement in order to solve the problems of the Local Centers Sub-System, is the development of a dependable information systems conceting the centers

with the headquarters, possibly with the use of computer lines, in order to attain a higher degree of information speed and trustworthiness. However, it is assumed as a leading idea for this paper that the solution to the structural problem is in a certain sense previous to other efforts. For that reason, it is convenient to develop some conceptual explorations in the field of the theories of the organization, that may help to clarify the alternatives for improving the current structural design of the DTS. This paper pretends to present a contribution under that line of thought.

In short, the problem to be discussed here can be formulated in the following terms:

1) The DTS is an essential piece for the accomplishment of the main goals of UNA, in the sense that it allows the dissemination of distance instruction in the different academic programs, thus permitting the access to Higher Education to many persons and forming them as professionals.

2) The operation of this sub-system is affected--among other factors--by some imperfections in the structural design of the organization. The most notorious of these imperfections are the placement of the DTS along with other units (Audiovisual Production, Printing) that bear no important relation to it, and the lack of well defined functional interaction links between the DTS and other units of the central headquarters. These negative factors have to be removed or reduced in order to provide a more effective and efficient operation of the DTS and--by extension--of UNA.

3) In this study, the structure and processes of the DTS will be analyzed under the light of one of the organizational theories--the "open systems" rationale,--in order to provide alternatives of organizational design for the DTS. These alternatives will specify differentiation of units in the DTS and main lines of interaction among those units and other segments of UNA system.

PART TWO: RESTRUCTURING THE DTS UNDER THE VIEW OF AN OPEN SYSTEMS PERSPECTIVE

1. A Preliminary Note on Organizational Theories and Their Applications to Education

Approximately since 1900,[7] a consistent body of scientific knowledge concerning human organizations has been accumulated. This realm of knowledge has not received yet a definitive name which encompasses all the partial developments under a single denomination; the first writers in the field spoke about "Scientific Administration,"[8] but most recently some other names have gained popularity in different moments: "Management Service," "Organizational Behavior," "Theory of the Firm," "Organizational Analysis," and so on. Each name intends to stress a specific approach or area of concern, but the methodologies, principles, concepts and facts that are referred to by those names are connected to such an extent that at present it is impossible to see them as separate fields. In this paper, the generic name of "Organizational Theories" will be used in order to make reference to that body of knowledge. This name stresses two main aspects: the focus on human organizations, on one hand, and, on the other, the intent of building conceptual frameworks to understand those organizations, which has been characteristic in most of the contemporary literature in the field.

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[7] Massie, Joseph C. "Management Theory," in James March (ed.), 1965, Handbook of Organizations, p. 388.

[8] Taylor, Frederik, Shop Management, 1911.

Jay Galbraith[9] notes that any of those so-called theories of the organization is completely applicable in a particular setting. Instead of that, each theory seems to enlighten a determinate set of issues of the organization's life and leaves other questions in the shadows. The practical conclusion about this would be that, when studying organizational problems, one should apply different conceptual frameworks in order to generate ideas about possible solutions. Galbraith himself states that for doing an adequate structural design of complex organizations one should use five different approaches in combination: classic structural analysis, task analysis, reward systems design, human factor analysis (training, selection, promotion), and analysis of information and decision processes. This proposal is very significant for the purposes of this paper, which is to analyze a problem of organizational design in a particular institution. It will be legitimate then to study this problem within the framework of five or six theories, drawing particular conclusions from each one. After that, it will be necessary to integrate all the conceptual pieces, in order to build a plausible puzzle image of the organization. However, this process of analysis and synthesis far outreaches the academic purpose behind this paper.

For that reason, the paper will focus on one particular theory that seems very appropriate in an heuristic sense for the kind of organization under study. This theory is the so-called <u>open systems approach</u> or <u>environmental dependency perspective</u>; the meaning of this rationale will be explained in the next section. It is obvious hence that the

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[9]Galbraith, Jay, <u>Organization Design</u> (Reading, Massachusetts, 1978, pages 1 to 32).

conclusions of the analysis will be biased to the side of that theory, and cannot be considered as the unique or most appropriate to the set of problems presented in Part One. Instead of that, those conclusions may be regarded as one of the alternatives of solution, or even better, as a component of a type of solution. The global problem of how to design and implement a more efficient and effective organization of the DTS in UNA, has to be studied in its many sides. In this respect, Galbraith's list of approaches may be helpful in finding a functional and feasible design for the structure and process of that portion of the UNA system.

On the other hand, one more prevention has to be taken into account when using the organzation theories for analyzing that kind of system: it has to be acknowledged that all those theories have emerged mainly from the study of business corporations and industries. The implications of this fact have been clearly pointed out by Besse,[10] who advocates for a careful use of organization concepts in universities. Among his many arguments it is convenient to quote the following:

- The procedures for achieving goals--and hence the measures of achievement and accountability are not as clearly stated in a university as in an industry, and they cannot be stated in such a way.

- The organizational authoritarianism, which is characteristic of the corporations, is substituted in universities by political compromise. Due to a lack of clarity in goals and the procedures

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[10] Besse, Ralph. A Comparison of the University with the Corporation, in James Perkins (ed.), The University as an Organization.

for achieving goals, it is necessary that the actors who allow the accomplishment of goals in the university setting--teachers and students--have channels for participation in the most important decisions.

- In corporations there is not a process that parallels student management. This is a very complex area, that requires negotiation with student organizations and satisfaction of many "surplus" needs. The students themselves are seen as the "products" of universities, and therefore they have to merge their effort with the whole institution in order to achieve acceptable standards of quality for themselves.

The characteristics of universities that can be acquainted in the former discussion indicate that they are a different kind of organization, and therefore require special approaches when considering their structural design. Two characteristics seem of major importance in this sense: a more spread out distribution of authority with pluralist participation, and a need for allowing channels for the users in order that they influence the important decisions of the institution. These characteristics will be recalled in the section on the proposal for the organization of the DTS.

2. Characterization of the Open Systems Rationale

The so-called Open Systems approach does not constitute a clearly delimited set of concepts and propositions, that can be worked deductively to draw conclusions about particular organizations. Since the first recognized formulation of the Open Systems perspective by

Katz and Kahn,[11] this line of thought has been characterized by an accumulation of overlapping concepts without the systematic character of a "theory." Perhaps Katz and Kahn were aware that this was going to be the pattern of development of the child they gave birth to when they wrote:

> In some respects open-system theory is not a theory at all; it does not pretend to the specific sequences of cause and effect, the specific hypotheses and tests of hypotheses which are basic elements of theory. Open-systems theory is rather a framework, a meta-theory, a model in the broadest sense of that overused term. Open-systems theory is an approach and a conceptual language for understanding and describing many kinds and levels of phenomena.[12]

As the purpose of this paper is not to do an epistemological analysis of Open Systems rationale, it will be intended here to summarize the main contributions of this approach to the understanding of organizations. In this respect, it is necessary to acknowledge that nowadays Open-System rationale, is a mixture of different parallel developments: "classic" Open Systems (Katz and Kahn, 1966), environmental analysis and typification (Emery and Trist, 1965; Aldrich, 1976), Contingency Theory (Lawrence and Lorsch, 1967), Resource Dependence Perspective (Pfeffer and Salancik, 1978), and others.

The classical theory of organizations[13] conceived human instituions as systems formed by components articulated in order to accomplish certain goals. This postulate determines the visions of the classical theorists on every issue related to organizations. For instance: organizational structures are designed by differentiating and assigning

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[11] Katz and Kahn, The Social Psychology of Organizations, New York, Wiley, 1966.

[12] Ibid., p. 452.

[13] Kast, Freemont and James Rosenzweig, Organization and Management, 1974, Chapter One.

to units the functions required to accomplish the goals; human resources are selected in function of the ability profiles required for the effective accomplishment of tasks; communications in the organization exist to facilitate goal achievement by connecting the units with task-related channels; and so on and so forth. The open systems "theory" constitutes a marked departure from this idea, by stressing that organizations depend on their relationships and exchanges with their extenal environment.[14] In this perspective organizations are seen as "living" beings that look for resources in the environment in order to maintain the internal balance, process those resources through determinate cycles, and accommodate themselves to varying circumstances in the environment in order to survive; these accommodations may signify even changes in the original goals.

The Open Systems perspective introduced a conceptual revolution in the field of organizational theories, because it changed the frame of reference for reasoning on organizations, and gave priority to phenomena that were neglected by former theorists. The following statements summarize some of the key points that differentiate Open System Theory from the Classical Theory.[15] There have been included in the list mainly those principles or statements which are more meaningful for the problem on study in this paper:

a. The demands and needs of the environment give directions to events in organizations, as well as the stated goals.

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[14] Hall, Richard, Organizations: Structure and Process, 1977, Chapter 1: The Nature of Organizations.

[15] This list of key points is excerpted from a presentation of the differences between the two approaches in Hanson, Educational Administration and Organizational Behavior, 1979, pages 181 to 182. A rephrasing of the propositions has been performed by the author of the paper.

b. Power is diffused into the sub-systems that integrate the organization, and not concentrated in the roles of the top managers.

c. Communication must be multi-directional in the organization, in order to make all the people aware of and reactive to changes in the environment. Communication that goes mainly from the top to the bottom of the organization tends to be isolating.

d. Productivity is established mainly by the ability of the organization to manage effectively its linkages between the internal subsystems and the external environment, and not by simply stating goals and rules.

e. The managerial subsystem must function in support of the needs of other subsystems; administration of authority is not the central function of managers.

f. The source for equilibrium and order in an organization are the exchanges with its environment, and not the rules and definitions of roles.

Given this general view of the Open Systems rationale, it is convenient to analyze now some particular theoretical developments outgrown from this framework, which may be used as tools of analysis for appraising the organizational problems of UNA. This discussion will refer mainly to the following topics: the criterion of organizational effectiveness, the types of environment, the theory of organizational change as contingent to environmental variations, the enacted or created environment and the design of externally influenced institutions.

Criterion of Organizational Effectiveness

Pfeffer and Salancik[16] define organizational effectiveness as "the ability of an organization to create acceptable outcomes and actions." The key term here is "acceptable," because it places effectiveness

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[16]Pfeffer and Salncik, Op. cit., 1973, p. 12.

as an external criterion. An organization is not effective by simply accomplishing goals, but accomplishments have to meet demands of people and organizations acting as clienteles for that organization. For Aldrich[17] this criterion of effectiveness determines the survival of an organization: if it achieves an adequate exchange of resources with external constituencies, it will stay up; if it cannot meet meaningful needs for anybody, it will collapse.

An extreme view of this concept of effectiveness may postulate that the real purpose of organizations is not to obtain goals, but to achieve an adequate exchange of resources with the environment that allows them to maintain a positive internal balance. This is what Pfeffer and Salancik call the resource dependence perspective.[18]

Type of Environment

Due to the importance of environment for Open System theorists, they have tried to identify the dimensions within which the elusive context of the organizations varies. The seek for dimensions of the environment has made it possible to acknowledge that organizational environments are not given realities, they are not "out there," but they are created by a process of selection and interpretation of information about the outside world. Many organizations may coexist in the same city or region, but each one of them will have a different environment. A corollary of this concept is that the organization decides in which environment to live by creating subunits that gather

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[17]Aldrich, Howard. Organizations and Environments, 1979, page 22.

[18]Ibid., (Pfeffer and Salancik),page 258.

and screen in external information. Information which is not collected will not influence decision making, and information which is heavily represented in the organizational records will shape emphatically many decisions.

Taking as a point of departure this "subjective" concept of environment, Aldrich[19] identifies six dimensions of environmental variability:

> environmental capacity: the relative level of resources available to an organization within its environment, varying from lean or low capacity to rich or high capacity environments.
>
> environmental homogeneity-heterogeneity: the degree of similarity between the elements of a domain population, including individuals and organizations. Varies from undifferentiated or homogeneous to highly differentiated or hetergeneous.
>
> environmental stability-instability: the degree of turnover in environmental elements.
>
> environmental concentration-dispersion: the degree to which resources, including the domain population and other elements are evenly distributed over the range of the environment. Varies from random dispersion to high concentration on specific locations.
>
> domain consensus-dissensus: the degree to which an organization's claim to a specific domain is disputed or recognized by other organizations.
>
> turbulence: the extent to which environments are characterized by increasing interconnection between elements and trends, and by increasing rate of interconnections.

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[19] Aldrich, 1979, op. cit., page 74.

Contingency

One of the leading ideas of the Open System rationale, that of the natural capacity of organizations for making internal accomodations in the face of environmental variations in order to maintain equilibrium, has been elaborated in depth with the name of "Theory of Contingency."[20] According to it, the organizations adapt the pattern of their internal structures to match the variability in environmental needs and demands. Therefore, the degree of structural flexibility of an organization is a function of the amount of uncertainty or complexity it founds in the environment. For instance elementary schools, that usually have a very stable environment, influenced mainly by the pupil population growth and the stereotyped expectations of parents about what schools should teach, tend to develop rigid bureaucratic structures; in contrast the universities, that face a very challenging environment influenced by technological changes, political factors, heterogeneity in students' expectations, and so on, tend to develop more flexible departmental structures.

Lawrence and Lorch found that the more uncertain and unpredictable the environment, the more differentiated and integrated were the susbystems within the organizations. Differentiation is defined as the variability in formal structure, time orientation and goal orientation of sub-units. Integration is defined as the degree of collaboration that exists among the sub-units to undertake efforts that are required by the demands of the environment.

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[20] Lawrence, Paul and Jay Lorsch, Organization and Environment: Management Differentiation and Integration, Cambridge, Mass.: Harvard University Graduate School of Business Administration, 1967.

Selectivity of Influences and the Created Environment

As a corollary of contingency theory, it can be said that organizations exert a selectivity on the influences that they receive from the environment. By manipulating the creation of sub-units or communication channels they determine what kind of information will access the decision levles and what kind of information will be buffered in order to prevent annoying effects. This fact is described by Pfeffer and Salancik,[21] as the use of compliance or avoidance strategies in the face of environmental demands and controls.[22] Compliance is the acceptance of influence, a loss of discretion, and it can be produced by coalitions or mergers with external constituencies, creation of communication channels, acceptance of rules, and others. Avoidance is the maintenance of autonomy and discretion by using strategies such as: limiting access to communication channels, buffering information in intermediate levels of the organization to make it ineffective, loosely coupling (decentralizing) the peripheric units of the organization by delgating in them some instances of decision.

By using compliance and avoidance in adequate doses, organizations manage to obtain a state of dynamic equilibrium for surviving, because any organization can be either totally free of external dependency or completely receptive to every kind of external influence. This

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[21] Pfeffer and Salancik, 1978, op. cit., Chapter Five: Managing Organizational Demands: Adaptation and Avoidance.

[22] Controls can be exerted by external agencies mainly when they dominate resources which are of value for the organization.

dual process of facilitating and restraining external information allows the organizations to create their environments.

The Design of Externally Controlled Organizations

After reviewing the former discussion on the concept and principles of the Open Systems approach, one might ask what implications they have for the design of organizational structures. In this respect, Pfeffer and Salancik,[23] stress that as the dominant objective of the organization is to acquire resources for survival, it has to face constantly the dilemma of seeking at the same time stability and certainty in its resource exchanges--which involves different degrees of compliance, and avoidance of control for maintaining autonomy for independent action. This dilemma can be answered adequately by including in the organizational design certain devices, aimed at providing the organization with a capability for absorbing relevant controls without being overwhelmed by them.

In this respect, Pfeffer and Salancik propose--among others that can be thought of, four strategies for the design of externally controlled organizations:

a) Scanning Systems. Include in the organization specialized units or specialized channels in the existing units, in order to gather information about the context--needs, trends, demands, significant changes, etc.

b) Loosening Dependencies. This can be accomplished by internal changes in the organizations or by modifying the interaction

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[23] Pfeffer and Salancik, op. cit., 1978, pages 268 to 278.

with external agencies. An example of the first is to decentralize the sub-units which perform the most intense exchange of resources with the environment; so they will behave with a certain autonomy, and will not cause turbulence to the production sub-units and central management. An example of the second is to diversify the agencies that provide resources, then any of them will have enough capacity of control to subdue the organization.

c) Coping with Conflicting Demands. The problem of conflicting demands arises when the resources of the organization become very appealing to other organizations or the clients; then the number and diversity of demands tends to create conflicts. Appropriate responses to this kind of problems are also found in loosely coupling the involved sub-units and diversifying the attended clientele.

d) Design of Chief Executive Positions. Here Pfeffer and Salancik refer to executives in typical corporations that develop a variety of products. They stress the idea that executive roles must be differentiated according to the segments of the environment that the organization attends. This means to have several chief executives that have familiarity and good image in different areas of the environment. As this solution may be too costly for the organization, they present the alternative of keeping one chief executive but have the actual control of the organization lodged in a multiparty executive position.

In Section 4 of this part of the paper the applicability of those strategies for the design of the DTS of UNA will be discussed.

3. Analysis of UNA from the point of view of Open Systems Perspective

In this section, the operation and structure of UNA--with special emphasis on the DTS--will be analyzed by using as criteria of appraisal the key concepts of the Open System approach formerly discussed. Specifically, the analysis will be focused in the following topics: the external criterion of organizational effectiveness, the dimensions of the environment, the organizational response to external contingencies, and the selectivity in face of external influences.

Organizational Effectiveness

In a closed system perspective, the effectiveness of UNA could be defined as the ability to meet the goals of the organization. These goals can be stated at least in three levels of analysis: the goals of the institution as a whole, the goals of each one of the academic programs (Administration, Engineering, Education and Mathematics), and the goals or objectives of instruction in the particular courses. Due to the relative newness of the institution, at this moment only the course objectives can be evaluated with certain accuracy, the higher level goals may be evaluated only after a certain maturation of the institution.

However, if an external criterion of effectiveness is adopted, which means to focus the evaluation on the exchange of resources between the organization and its environment, then it will be possible to advance a diagnosis of the effectiveness of the system.

Following this order of ideas, it would be necessary to determine in the first place which are the resources that UNA exchanges with the environment; in other words: which resources are provided by UNA to external constituencies, and which resources are needed by UNA from the environment in order to survive. Figure 3 represents schematically these two kinds of resources.

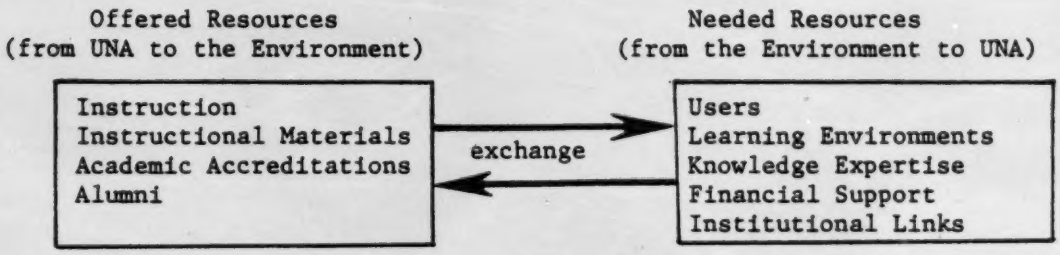

Figure 3. Main Resources Exchanged Between UNA and Its Relevant Environment.

It can be observed that in both sides the categories of resources tend to overlap, but this is not an impairment for analysis because a resource can be meaningful by its own as well as forming part of another resource.

UNA offers to the environment the following resources:

instruction in higher education level for anyone that accomplishes the prerequisite demanded by Venezuelan law to access that level: completed high school.

instructional materials; these form part of instruction, but also they can be considered as separate resources because other people different from the UNA students may acquire the individualized textbooks or audiovisuals produced by UNA.

academic accreditations of proficiency in determinate course. These are the results of instruction, but also can be separated, because some users can seek instruction without accreditation, and other users seek accreditation without instruction, by recognition of experiences.

alumni. This is the most elaborate product of UNA, which is offered to the society in general. It is expected that UNA graduates will merge into the labor force of Venezuelan society and participate in its development

In turn, UNA seeks in the environment the following resources; which are competed by other institutions:

users. These may be categorized as: conventional students, when they are enrolled for a complete career program; or as continuing education participants, when they only take some courses for personal endowment; or as purchasers, if they are only interested in the instructional materials.

learning environments. Due to a constituent policy, this institution is supposed to operate with a minimum dotation of facilities and equipment for instructional purposes, because the academic programs are aimed at adult learners that work. Then the instructional environments must be sought in external institutions that collaborate with UNA.

knowledge expertise. This refers to the specialists in different areas of knowledge that UNA requires to develop the academic programs. The most critical sector is the Learning Centers, because they have to provide academic advisors to the students in the different program areas. This is highly limited by the general scarcity of prepared human resources in Venezuelan society.

financial support. As UNA is a public university, the gross of its budget comes from governmental assignations, but it is expected that the institution can generate monies through the enrollment fees (they are very low), the sales of instructional materials, and the services lend to external institutions.

institutional links. These are essential, because through institutional agreements with external organizationa UNA can achieve respectability in the academic world, find instructional environments for the students, and increase its financial support

There are some other significant resources that UNA may exchange with the environment--i.e., research knowledge, advisory in technical areas--but the list includes the most important factors for the adequate operation of the system.

As a general diagnosis, it can be said that UNA is not achieving presently a positive exchange of resources. There is a lot of information in the UNA records to support this statement, but on behalf of brevity here will be mentioned only the most salient facts.

users: there is a very high dropout rate of conventional students, usually a 75% to 80% of the students entering in each cohort is lost in the first year; there are approximately 10,000 to 12,000 students per cohort. Very few users of UNA enter in the category of continuing education participants, and almost none in the category of purchasers because the institution has not yet developed a sales system.

learning environments: there is a high competency of other universities or training institutions for obtaining facilities and equipment similar to those required by UNA students. Some Learning Centers are located in scarcely populated areas where the appropriate environments cannot be found.

knowledge expertise: there is a high rate of turnover among the advisers in the Local Centers, many of them do not meet the profile requirements to be advisers but are contracted because of the needs, and there is a high competence by other institutions for obtaining similar resources.

financial support: the governmental allocation is currently in a period of retrenchment, and there is a high competence by other public universities that also depend financially on the government. The internal earnings of the University have not yet proved to be effective.

institutional links: there are few institutional links working at the level of the Learning Centers. One of the limiting factors in this respect is that most of the Coordinators of the Local Centers come from the professional medium of Education, and particularly from Secondary Education; therefore they do not have adequate receptivity in the areas of Administration and Engineering, which are the quantitatively dominant programs in UNA.

The facts that have been mentioned in this rough diagnosis point overwhelmingly to the need of reinforcing and creating policies that allow for an increment in the acquisition of relevant resources. If this is not done, the obvious consequence will be a very low level of effectiveness.

The Organization's Environment

Precise data about the environment of UNA are not available, because one characteristic of the institution has been to focus its information systems on the inside processes. However, some extrapolations can be made on the basis of that information in order to infer the dominant characteristics of the environment. This procedure will be used here for appraising UNA's context through Aldrich's list of environmental dimensions. It is necessary to say that this appraisal involves a lot of subjectivity and the conclusions have to be tested in the future by other procedures.

Figure 4 summarizes in a profile the evaluation of the six dimensions. Every dimension was valuated in a five point scale; on the left side there are grouped the characteristics that have negative or difficult consequences for the organization, and on the right side there are grouped the characteristics that tend to have favorable impact on the organization .

Environmental capacity is considered variable, because the 20 Learning Centers face different conditions of environmental resourcefulness, varying according to the volume of population and degree of industrialization of the urban centers and regions where they are located.

Resources are considered highly heterogeneous for all the centers, because student's background, abilities and program preferences tend to vary, as well as the institutions that may be helpful to the Center, and the qualifications of the actual and potential advisors.

The environment is considered in general stable, because students, external institutions, potential advisors, and financial support maintain

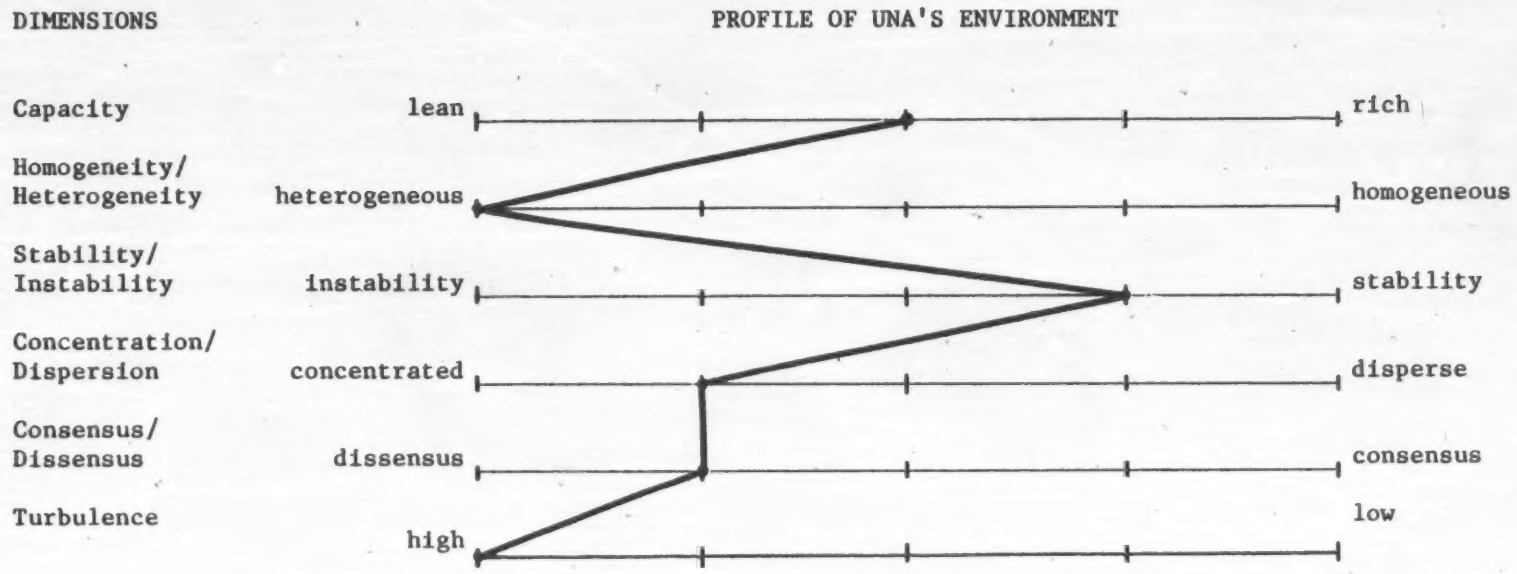

Figure 4. Profile of UNA's Environment over Aldrich's Environmental Dimensions.

low rates of growth or diminuition over yearly periods.

Resources are considered concentrated because there are two main kinds of sources that dominate most of the resources: the governmental agencies and the private industries. They can provide users, financial support, institutional links, and so on. There are very few students of UNA who do not belong to one of those constituencies. Private industries even when they are diversified are considered also as concentrated, because they are associated into regional business chambers which are highly influential in matters of creating institutional links.

Dissensus is present because of the high competence by other institutions for some of the resource types: knowledge expertise, financial support, and instructional environments. This variables is attenuated by the fact that the typical users of UNA--adults who work and cannot attend to presential teaching--cannot find other alternatives.

Turbulence is very high, because all the resource types are interconnected, and variate by the effect of mutual influences. Apparently the key resource type is the institutional links, because if the Local Center achieves a good deal of them, it will have access to more users, learning environments, knowledge expertise and financial support.

Response to External Contingencies

As a general conclusion of this diagnosis of the environmental variables, one can say that the context of UNA is typified by a predominance of negative characteristics which require great adaptability in the system. Using the postulates of Contingency Theory, one should say that this adaptability would be characterized by an intense use of resource acquisition links, and by the creation of units or channels

that scan the environment and permit to forecase the future states of the resources in order to plan accordingly. It would be necessary too to lossen the coupling between the centers and the headquarters, in order to allow the formers more autonomy in the search for resources, and also to prevent that the demands and problems of each one of the centers have a destabilizing impact on the whole system.

Following Lawrence and Lorch's postulates, it can be suggested that the DTS make use of differentiation and integration. Differentiation may be applied by a higher specialization in functions of the constituting sub-units of the DTS, and perhaps the creation of new sub-units to attend functions that nowadays are neglected: i.e. the creation of instructional links at the Learning Center level. Integration can be achieved by creating direct communication between the academic programs at the headquarters and the executors of the programs in the centers, meaning the advisers and orientators. One more strategy to enhance integration will be to create groups of interacting centers according to the geographical regions, this will facilitate the loosening of dependency from the headquarters and the sharing of resources among centers at the regional level.

Selectivity of Influence

In order to analyze this point, it is necessary to acknowledge that currently the most important source of relevant resources for UNA is the National Government by means of the Ministry of Education, and the National Council of Universities.[24] This last is a collegiate

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[24]Drayer, Alberto and Francisco Castillo. La Educación Superior en Venezuela, in Papeles Universitarios, n. 20, 1981.

corps, presided by the Minister of Education, and formed by the Rectors of all the national public universities of Venezuela (13 in all), and some representatives of other constituencies. This organism is aimed at coordinating the planning and operation of the university system. Among its many functions, it decides the annual budgetary allocations for the national universities on the basis of funds provided by the Ministry of Education. In general, all the universities complain about their share in the budgetary allocations, but the degree of dependency that they have from those funds is variable. There are some universities that can generate fairly good amounts of internal earnings and there are others that cannot. UNA is in the last group, because--as it was seen formerly--it has not reached yet an efficient production of resources to trade with the environment. This means that presently the governmental financial resources rank in the first place as needed resources for UNA.

The logical conclusion of the Open System approach, in respect to this dependency problem of UNA, would be that the institution has to diversity the sources for resource acquisition in order to diminish its dependency from governmental funds. This would permit UNA to have a state of relative equilibrium in respect to the environment. If UNA does not strive in the direction of avoidance of dependency from the Central Administration day by day its situation will impoverish, because governmental support will be increasingly scarce and it will be always competed by other universities which are located in a better financial stand than UNA.

The achievement of new providers of resources involves compliance to external constituencies, then UNA has to choose which of the alternative resource-holders are appropriate elements to comply with. In a rough

analysis, it seems that the creation of institutional links with public administration and public education institutions, and with business organizations, like industries and chambers of commerce, rank in the first order or priorities as relevant resource-holders; they can provide UNA with other resources like users, instructional environments, knowledge expertise, and so on. In second place of priority are the students of UNA themselves; the organization has to promote the creation of student associations (they do not exist yet) in order to have interlocutors with the student body. It is necessary also to have in each one of the Learning centers an officer or group of officers who are in charge of managing the students affairs: needs, complaints, academic or administrative problems, etc.; this function is not specialized currently in any of the sub-units of the Center, but scattered in all the units.

4. A Proposal for the Design of an Externally Controlled DTS

The former discussion has permitted establishing that the interaction between UNA and its environment is not working in an effective way. This fact might be overlooked to a certain extent if it occurred in a conventional university, because this kind of institutions tend to be self-contained: they have a campus, a set of facilities, a stable faculty and many other resources that in a certain sense belong to the institution. For that reason, a conventional university can work in a relative isolation from the environment, provided that its essential resources are secured for a long period of time. An Open University like UNA instead has to count on the environment in order to survive. I thas been built as a kind of communication network to facilitate instruction to many people; but the content of the communications that

flow through the network depends on external agents: the specialists who develop the instructional materials, the part-time advisers that help the students with their learning problems, the institutions that provide appropriate sites to the students for realizing in-service trining, and the distance students by themselves that have to create appropriate learning conditions in their homes. For all those reasons, UNA has to work intensely in achieving effective links with the environment much more than the conventional universities do.

If one observes the organizational chart of UNA in Figure 1, it may be noticed that the design of this institution does not correspond to an externally oriented system. Indeed, the classical bureaucratic view of organizations is predominant in that design. Units are arranged in separate branchings according to their function in the accomplishment of the global goals, and there are not horizontal connections among the organizational branches. All the integration of the system is concentrated in the top levels. Another typical closed-system-feature is that the institution is extremely centralized; all the important decisions have to go to the top level; in this sense, the advantages of loosely coupling the peripheral sub-units--the Learning Centers--are not taken into account.

In the view of Open Systems perspective, the DTS would be considered as the dynamic bond of UNA with the environment. This sub-system, formed by the Learning Centers and their coordination units at the headquarters level, would oprate as a boundary energy transporter from the outside to the inside of the system and vice-versa. This conception is represented in Figure 5.

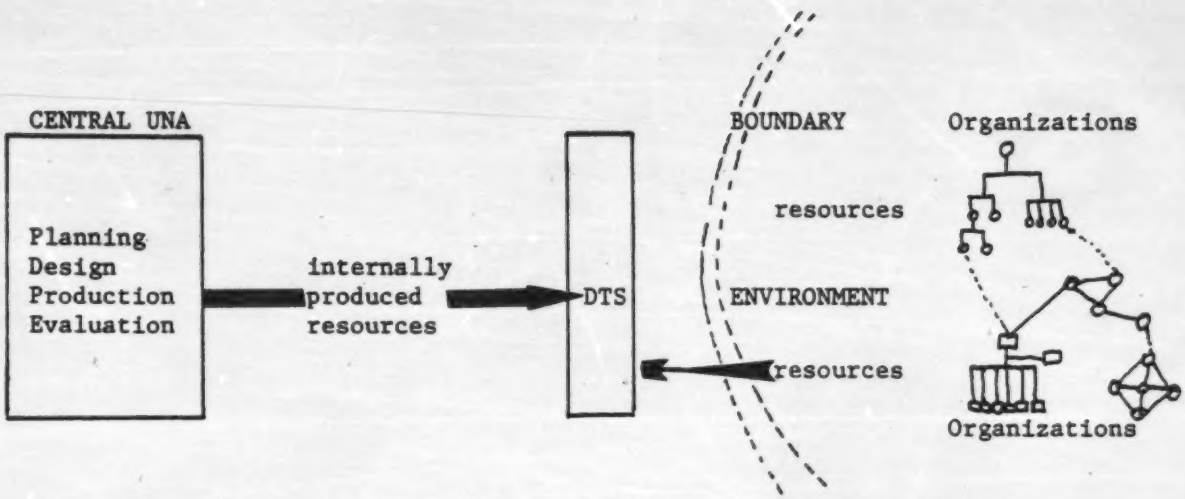

Figure 5. Schematic Representation of the DTS as a Mediator between UNA and the Environment.

The adoption of this model of operation of the DTS involves the application of some guidelines about process and structural design, that will be discussed in the following lines.

Process Design

The operation of UNA is based on a cycle of interconnected functions and tasks which are seen as sequential. They are intiated in the headquarters of UNA and have an end in the Learning Centers, then an evaluative feedback to the central headquarters is supposed to close the cycle. These functions and tasks may be summarized as follows:[26]

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[26]The listing of functions and tasks of UNA is abstracted from the document "Operational Mode of UNA System," Modelo Operativo del Sistema UNA, internal publication, 1979.

Main Operational Cycle of the UNA System

FUNCTIONS (PHASES)	TASKS
A. PLANNING	1. Determine needs of human resources and establish desirable profiles of the graduates to be formed.
	2. Design the curriculum for the academic programs.
	3. Elaborate Course Plans for each one of the components of the academic programs.
B. DESIGN	4. Select or elaborate instructional materials according to the course plans.
	5. Elaborate assessment instruments to match the instructional materials.
C. PRODUCTION	6. Produce the printed texts or guides according to the prototypes of the design phase.
	7. Produce the audiovisual and other complementary media of the printed material.
D. DEVELOPMENT	8. Select and train academic advisors for the courses.
	9. Prepare the adequate instructional settings in the Learning Centers or in external institutions (learning environments).
	10. Deliver the course packages.
	11. Implement teaching-at-a-distance activities.
	12. Implement student assessment activities.

The Evaluation function is not included in the list, because it is represented by feedback loops in the key steps of the sequence of tasks. Therefore, evaluation must be considered as built-in in the list of functions and tasks.

This cycle may be termed centrally-initiated because it is originated in the headquarters and in a certain sense is directed in every moment by the headquarters; even the tasks that are performed in the Learning Centers are executed according to central instructions. This is a typically closed-system circuit in which the origin shapes every subsequent step.

It may be possible to conceive an externally-initiated cycle for opening the system to the environment. This cycle will be initiated in the periphery of the organization by means of the Learning Centers. The following listing includes the functions and tasks that would be considered:

Alternative Externally-Initiated Cycle of UNA System

A.	ENVIRONMENTAL SCANNING	1. Maintain permanent interaction with relevant segments of the environment, and gather information about their concerns and problems.
		2. Identify and assess needs in the segments of the environment on the basis of the information gathered.
		3. Discuss needs with elements of the environment, in order to achieve mutual compromise for meeting the needs.
B.	RESOURCE ANALYSIS	4. Determine optimum strategy and tactics for meeting the defined needs in the client's circumstance.

5. Analyze UNA's resources being pertinent to meeting the needs.

6. Design a tailored solution or program by combining UNA's resources with other new resources being pertinent.

(Here a Production phase may be included if necessary.)

C. APPLICATION

7. Prepare with the client the appropriate setting for applying the tailored program.

8. Develop program activities.

9. Evaluate program activities and provide feedback to the client in order to continue, modify, or terminate program.

The two cycles that have been defined may be complementary to one another by interlocking the centrally initiated programs, with other programs based on the demands of the environment.

Structural Design

It has already been stressed that the current structure of UNA is centralist and based on a closed system view, therefore it will be very difficult to operate externally-oriented programs in the context of that system. This is not simply a sylogistic asservation, because the posibility of serving clients with tailored programs is really impaired by the fact that the Learning Centers have little autonomy in the application of their procedures. Therefore, it is necessary to modify the current design of the DTS in order to achieve a fully responsive system facing the variations in the environment.

The discussion in Sections 2 and 3 already provided some principles for the structural design under an Open System perspective. It will be convenient to summarize them in the form of prescription sentences, before proceeding to intend an application to the DTS:

1. Include in the structure scanning units that allow gathering inforation from the environment. (Pfeffer and Salancik).

2. Relate the central management and the operational sub-units that have direct contact with the environment, by means of loosely coupled links, in order to prevent increased turbulence (Aldrich).

3. Differentiate through clearly specialized roles the functions in the sub-units that have direct contact with the environment, and integrate the roles for a flexible operation (Lawrence and Lorsch).

4. Provide support to the chief executive in the environment-vinculated branches with a staff of specialists in the different programs areas of the institution, in order to facilitate the acceptance of the programs by specialized sectors of the environment (Pfeffer and Salancik).

These principles have been used as a frame of reference for designing an alternate structure for the DTS which is presented in Figure 6. It is convenient to compare this structure with the current structure of that sub-system appearing in Figure 2 (page 12); this will provide a better view for appraising the differences.

As a most salient trait, it can be observed that the Learning Centers are decoupled from the central coordination by transforming four of them in Regional Centers, with a managerial role over the rest of the centers in the region. These Regional Centers will be located in strategic sites that serve as points of intersection for the communications in a whole region. Notice that in the proposed structure it is not shown the Educational Administration sub-unit, under the Coordination of Learning Centers. This is due to the reallocation of the administration

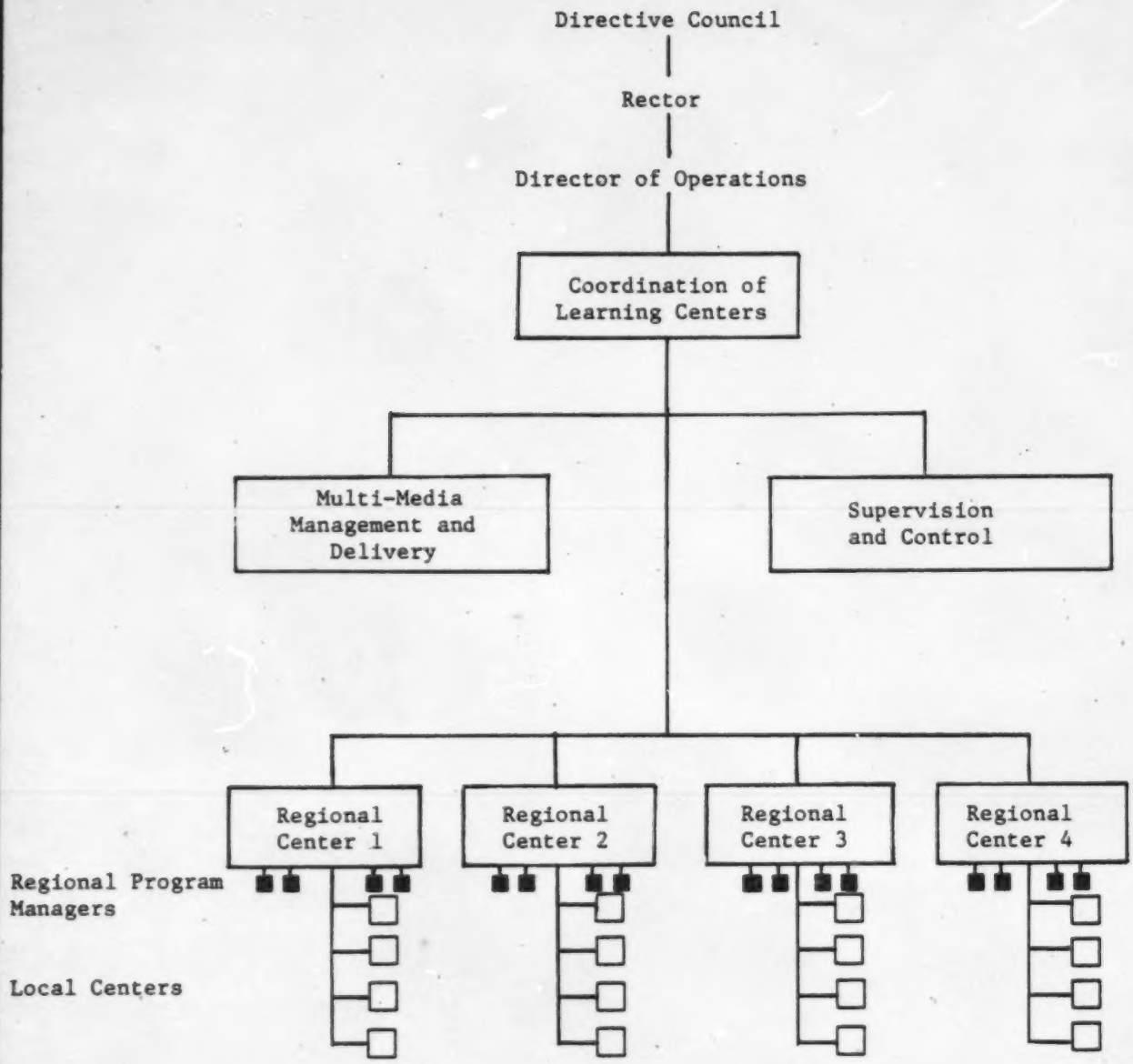
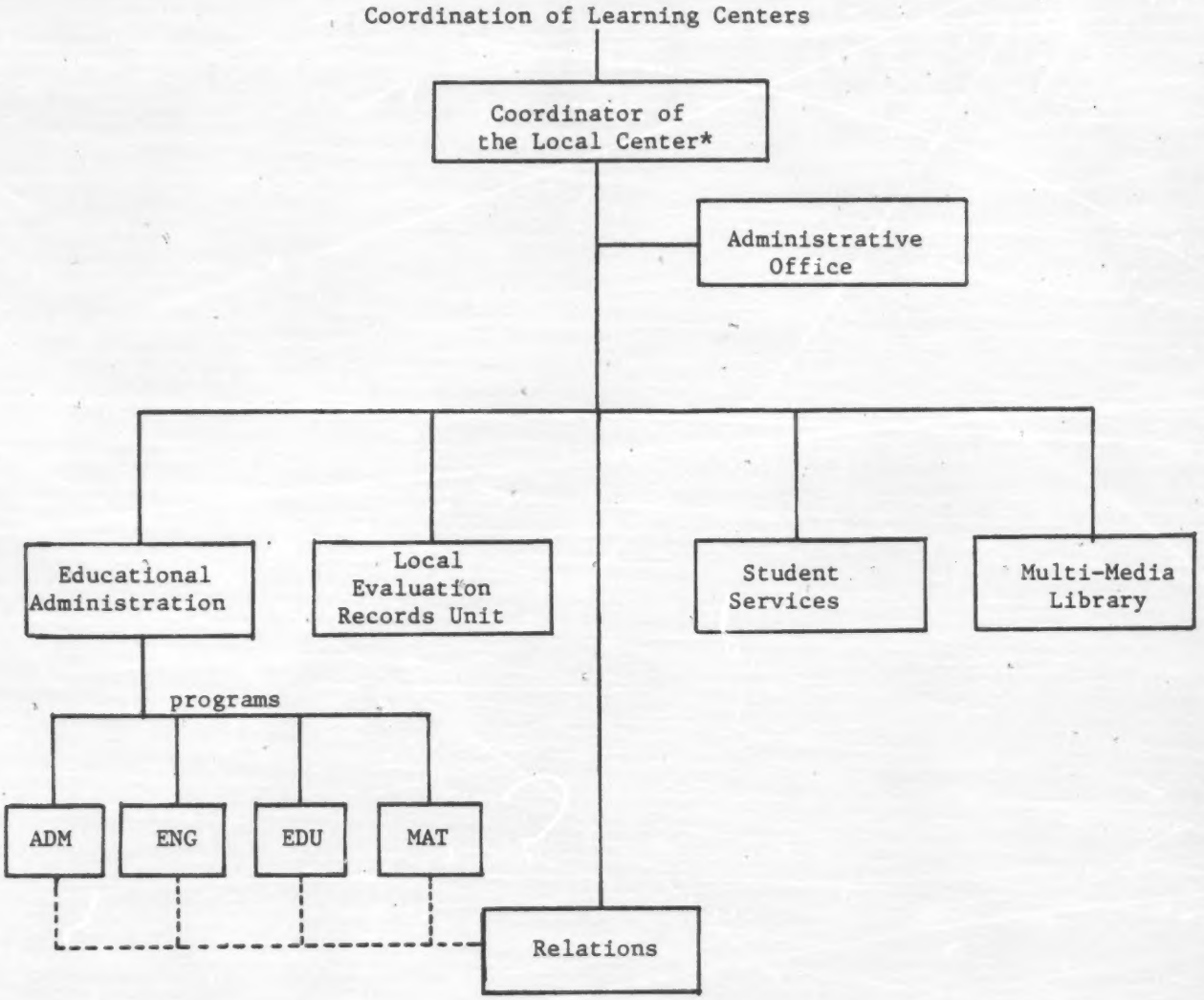


Figure 6. Proposed structure for the DTS.

of the academic programs in the hands of the regional program managers. They would be specialists in the program areas (Administration, Education, Engineering and Mathematics), and will be in charbe of planning and coordinating the program activities of the regional level, which includes several Local Centers. They will be in close communication with the respective academic areas at the headquarters level, and also with the institutions in the region that can be actual or potential resource providers. In this sense they will be a kind of supportive staff to the Coordinators of Regional and Local Centers in their capital function of establishing links with the environment.

It may be expected that if the suggested structural changes are introduced, the academic programs will be allowed to "weather" in the particular conditions of each region, instead of having undesirable uniformity due to the strict dependency on the headquarters.

The changes in structural design must involve also the internal structure of the Learning Centers, because they will have to accomplish new and more complex functions. In order to cope with the new demands it would be useful to apply to the Local Center the principle of differentiation and integration of roles. Presented in Figure 7 is a proposed structure for the Local Center that can be more effective for the interaction with the environment. In these structure basically have been enlarged the functions of some of the current sub-units that were described in pages 13 and 14; the one really new component is the Relations Unit, which would be in charge of managing the institutional links between the center and external organizations. In the table of pages 51 and 52 have been defined the new functions of the Local Center sub-units as compared with the current functions.



* The only variation of this basic structure in a Regional Center, is that the Coordinator of the Regional Center would have an attached staff of regional program coordinators.

Figure 7. Proposed Structure of a Local Center.

TABLE: FUNCTIONS IN THE PROPOSED STRUCTURE OF THE LOCAL CENTER AS COMPARED WITH THE PRESENT STRUCTURE

NAME OF PROPOSED SUB-UNIT	EQUIVALENT SUB-UNIT IN THE CURRENT STRUCTURE	PROPOSED FUNCTIONS	TYPE OF CHANGES IN RESPECT TO FORMER FUNCTIONS
Coordination of the Local Center	Coordination of the Local Center	Coordination and control of the center, management of external relations, planning and programming of activities in the center.	Essentially the same functions are maintained, with an increased emphasis on external relations.
Administrative Office	Administrator	Administrative Support	Same functions as in the former structure
Educational Administration	Academic Advisory	Advising students, administering advisor-marked evaluations, help the coordinator in establishing institutional links, supervising students during in-service training.	Essentially the same functions are maintained, but administration of teaching is emphasized.
Local Evaluation and Records Unit	Student Records	Administering and supervising the assessment procedures in the Center, planning assessment schedules, contracting external supervisors of exams, applying questionnaires for the evaluation of instruction, summarizing evaluation and assessment data for sending them to the central UNA, keeping records of the students, providing students with records transcripts.	The former functions are considerably enlarged, because the Local Center would have more autonomy in the administration of assessment and course evaluation.

(Continued) FUNCTIONS IN THE PROPOSED STRUCTURE OF THE LOCAL CENTER AS COMPARED WITH THE PRESENT STRUCTURE

NAME OF PROPOSED SUB-UNIT	EQUIVALENT SUB-UNIT IN THE CURRENT STRUCTURE	PROPOSED FUNCTIONS	TYPE OF CHANGES IN RESPECT TO FORMER FUNCTIONS
Student Services	Counseling	Attending student demands to the institution, interaction with student associations, promotion of UNA among potential users, vocational orientation of users, helping the students to find economic support, helping the less prepared students with remedial activities, provide information about UNA.	The former functions are considerably enlarged, by transforming this sub-unit in a channel for student participation.
Multi-Media Library	Multi-Media Library	Facilitate use of instructional materials and library sources in general, storing UNA's textbooks, provide facilities for the use of audiovisuals, keep records of the use of materials.	Essentially the same functions are maintained.
Relations	None	Establish contacts and agreements with external institutions with the help of the academic advisers, assess needs of external institutions, keep records of the characteristics and needs of external institutions, help the Coordinator of the Center in the linking function, keep records of students using external facilities.	This is a created unit that will help the Local Center in scanning the environment and establishing links.

It can be observed that the proposed structure of the Local Center has a higher specialization of functions as compared with the current structure. This would allow the center to respond more adequately to differentiated external demands, because each type of issue can be channeled through a sub-unit that has expertise in the type of problems.

Finally, this structure of the Local Center would be appropriate to handle with the externally-initiated-cycle that was described in the previous section. In fact, the Relations Unit and the Student Services units would be the scanning devices for the center in order to detect needs, demands and problems. The information about these issues would be processed through the internal units of the Center, to determine whether a solution can be designed with local or regional level resources, or is it necessary to refer the issues to headquarters.

5. Conclusions

In this study the problem of finding an adequate organization for the distance-teaching-subsystem in the Open University of Venezuela has been analyzed. The motivation is in a series of problems that this subsystem is facing presently in the following areas: communications with the headquarters and within the Learning Centers network, interaction with the environment in order to create a favorable balance of resources, and capacity for influencing thetop-level decision-making in the institution.

It has been observed that the analysis of these problems through an Open System perspective provides some insights about the factors that determine these problems. Basically, it may be concluded in this

respect that the current design of the organization is not oriented to receive external influences and take advantage of them for creating resources for the institution. This failure of the structural design can be appraised as a serious impairment for the effectiveness of the institution in accomplishing its teaching function. Therefore, structural changes are suggested for overcoming the problems that motivate this study.

In the search for alternative designs for the processes and structures of the distance-teaching-subsystem, it was determined that some key principles of the Open System rationale could be meaningful to provide suggestions for change. Particularly, the concepts of unit differentiation and integration, loose coupling, use of scanning units, and design of program-specialized staff positions, were found to be useful in providing organizational alternatives.

As a result of this analysis, a new structure of the DTS is proposed, which involves also modification of the internal organization of the Learning Centers. This proposal is presented as a paper for discussion to the people in the National Open University who are interested in finding a feasible solution to the conglomerate of problems associated with the organization of the Learning Centers network.

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